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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/404,076	CANFIELD ET AL.	
	Examiner	Art Unit	
	Karen Clemens	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☒ Responsive to communication(s) filed on *23 September 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☒ The [redacted] drawing [redacted] filed on *23 September 1999* is: a)☒ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☐ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s)
18)☐ Interview Summary (PTO-413) Paper No(s) _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other:

DETAILED ACTION

1. This application is a continuation application of Serial No. 08/763,669, *now U.S. Patent No. 5,976,876* which has priority to provisional application *60/008,502*. Applicant should amend the first line of the specification to include the current status of the non-provisional parent application and the correct numbering of the provisional priority document.

Claims 1 and 4 are currently pending and are under consideration.

2. The disclosure is objected to because of the following informalities. In claim 4 the term "competitively" is misspelled. Appropriate correction is required.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the Applicant regards as his invention."

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 2 would be more clear if it recited "an anti-hLHβcf antibody which competitively inhibits the binding of the antibody of claim 1 *to the human luteinizing hormone beta core fragment.*"

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter

and the claimed invention were, at the time the invention was made, owned by the same person subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a). The following is a quotation of the first paragraph of 35 U.S.C. 112:

Claims 1 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over O'Connor et al. (*Endocrine Reviews* 15(6):650-683, 1994) in view of Campbell (*Monoclonal Antibody Technology*, Elsevier Sci. Publishing, 1984).

O'Connor et al. teach that human chorionic gonadotropin (hCG), in particular the β core fragment (hCGβcf), derived from the hCG β subunit is a useful indicator in testing for pregnancy and many malignancies (see page 650, column 2 in particular). O'Connor et al. teach that the human luteinizing hormone (hLH) and hCG share extensive structural homology making immunoassays difficult because of the extensive cross-reactivity (see page 654, column 2; page 657, column 2 to page 658, column 1 in particular). In addition, O'Connor et al. teach that structurally homologous fragments of the β subunits of both hLH (hLHβcf) and hCG (hCGβcf), or β-core fragments, which also show extensive cross-reactivity, have been identified in the urine (see page 654, column 2 in particular). O'Connor et al. teach that the hCG and hLH cross-reactivity problems exist with polyclonal antisera, even when raised against the best available preparations of hCG or its β-subunit and have caused investigators to turn to the production of monoclonal antibodies to prevent cross-reactivity in immunoassays since monoclonal antibodies can be screened for specificity to closely related antigens (see page 658, in particular). O'Connor et al. also teach antibodies which can competitively inhibit the binding of the hCG-specific antibodies to its antigen to determine the relative orientation and location of the antibody binding domains (see page 661 in particular).

O'Connor does not teach the antibody which specifically binds to hLHβcf without cross reacting with hLH, hLHβ or hCGβcf. However Campbell teaches that "[i]t is customary now for any group working on a macromolecule to both clone the genes coding for it and make monoclonal antibodies to it (sometimes

without a clear objective for their application)" (page 29, section on Basic Research in particular). Campbell also notes that one of the major advantages of monoclonal antibodies for diagnostic use is their high specificity which adds greatly to the accuracy and speed of the diagnosis (see pages 17-18, section on "Diagnostic Uses" in particular).

Therefore, it would have been prima facie obvious to a person of ordinary skill in the art at the time the invention was made to make antibodies specific for the hLHβcf and which do not cross react with hLH, hLHβ or hCGβcf and to also make antibodies that compete for binding to the same antigen as the hLHβcf -specific antibody. One having ordinary skill in the art would have been motivated to generate the mAbs specific to hLHβcf, one of the macromolecules under study as taught by Campbell, which do not cross react with hLH, hLHβ or hCGβcf because these fragments, which are found in the urine, are highly homologous and show extensive cross-reactivity as taught by O'Connor et al. One having ordinary skill in the relevant art at the time the invention was made would be inclined to generate such hLHβcf -specific antibodies to properly evaluate the levels of the newly isolated hLHβcf in immunoassays of urine samples without interference from structurally similar molecules such as hLH, hLHβ or hCGβcf as taught by O'Connor et al. One would further have been motivated to generate antibodies which competitively bind to the same antigen as the hLHβcf -specific antibody to assist in eptiope determination. One skilled in the art at the time the invention was made would have had a reasonable expectation of success in generating the highly specific hLHβcf antibodies since the generation and screening of epitope-specific monoclonal antibodies is routine in the art and adds specificity, speed and accuracy in diagnostic applications, as taught by Campbell, and is the preferred method given the extensive cross-reactivity of the hCG and hLH glycoproteins as taught by O'Connor.

5. The non-statutory double patenting rejection, whether of the obvious-type or non-obvious-type, is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent. *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Van Ornam*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); and *In re Goodman*, 29 USPQ2d 2010 (Fed. Cir. 1993).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321 (b) and (c) may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.78 (d).

Effective January 1, 1994, a registered attorney or agent of record may sign a Terminal Disclaimer. A Terminal Disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 5,976,876. Although the conflicting claim is not identical, it is not patentably distinct because the instant claim recites an antibody which specifically binds to hLHβcf without cross-reacting with hLH, hLHβ or hCGβcf. The antibody recited in Claim 1 of the '876 patent has the same binding activities and is a species within the genus of the instant claim 1. Therefore, the patented claim is encompassed by the instant claim 1.

6. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Clemens whose telephone number is (703) 308-8365. The examiner can normally be reached Monday through Friday from 8:00 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 305-3014.

Karen Clemens, Ph.D.
Patent Examiner
Technology Center 1600
September 11, 2000

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